



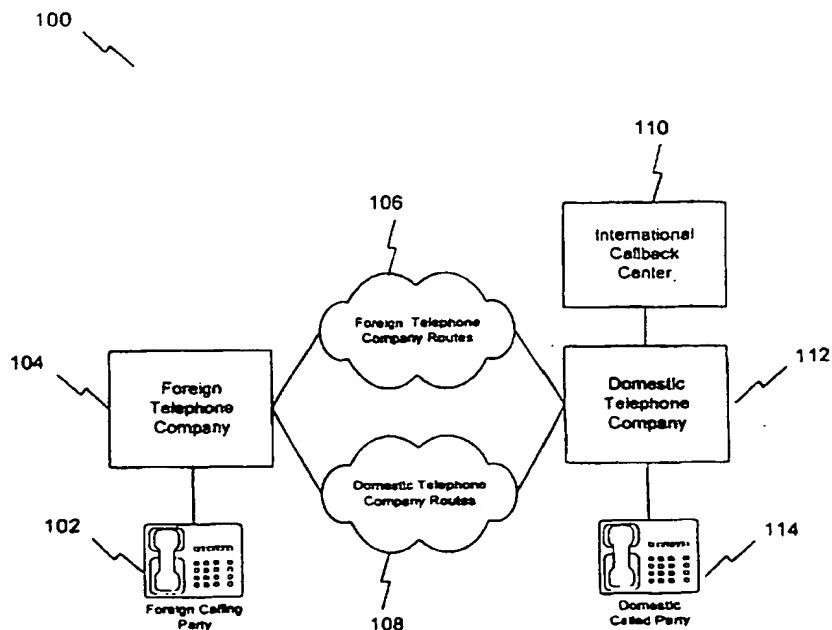
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(54) Title: SYSTEM AND METHOD FOR INTERNATIONAL CALLBACK

(57) Abstract

A system and method for performing international callback. To place an international call, a calling party places a first international call, originated in a foreign telephone company (104), to a domestic international callback center (110). During this first international call, the calling party schedules an international callback. At the scheduled time, the international callback center (110) first places a call to the domestic called party (114). Next, the international callback center (110) places a second international call, originated in a domestic telephone company (112), to the foreign calling party (102). The foreign calling party (102) and the domestic called party (114) are then connected.



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System And Method For International Callback

Background of the Invention

Field of the Invention

5 The present invention relates generally to telephone call processing, and more specifically is directed toward telephone call origination.

Related Art

10 Communication in a global community requires interconnection between telephone networks that are controlled by separate entities. In the context of an international phone call, a foreign telephone company represents a first entity and a domestic long-distance company (e.g., MCI Communications Corporation) represents a second entity. In servicing the international phone call, these two entities rely upon various communications means. For example, in supporting an international phone call between Europe and the United States, 15 the international phone call may be carried on a trans-Atlantic undersea cable that supports coaxial and/or fiber-optic facilities. Alternatively, the international phone call may be supported by connectionless satellite facilities.

20 Typically, a foreign telephone company and a domestic long-distance company are connected via a set of routes comprising an arbitrary combination of communication means. A particular telephone company may control a subset of these routes through ownership or leasing arrangements. The choice of either arrangement is largely based on the economics of the international calling market. One economic consideration is based on the volume of

international telephone calls that are carried over those routes. If the volume of international telephone calls is sufficiently high, a telephone company may take advantage of economies of scale. Specifically, a telephone company may be able to allocate a cheaper facility charge (i.e., facility cost per call) to a particular telephone call. In accordance with these economics, a telephone company will naturally seek to maximize the number of calls that are carried over the routes under its control.

In an international telephone call, the telephone company that originates the international phone call chooses which route the call will be carried on. As noted above, this choice will likely result in the call being carried on the routes under its control. The cost for this call will depend upon the facility charge for that route. Conversely, if the international phone call between the same parties is originated by the other telephone company, a different choice of routes results. This distinct routing may have a different facility charge. The disparity in facility charges is one source of the disparity in the cost of the international phone call.

A second source of the disparity in the cost of the international phone call resides in the control of the billing. If an international call is originated in a foreign telephone company, the call is billed according to the rates set by the foreign telephone company. The facility charge for the international route is just one aspect of the total charge that considers the foreign telephone company's entire infrastructure and overhead. If the foreign telephone company resides in a non-competitive foreign market place, the facility charges are unconstrained relative to their domestic counterparts.

In combination, these two sources of disparity contribute to the creation of a significant difference in the cost of international calls. For example, a call originating from Singapore and terminating in the United States will cost about \$1.00 per minute. Conversely, a call originating from the United States and terminating in Singapore, at the same time and between the same parties, will cost about \$0.45 per minute. This example highlights the importance of the origination of the international call.

Moreover, this disparity further results from the fact that competition between a domestic long-distance company and a foreign telephone company is non-existent. If a calling party in a foreign country wants to call a party in the United States, he has two choices. First, the calling party may simply pay the rates set by the foreign telephone company. Second, the calling party may instruct the called party in the United States to return the call using one of the domestic long-distance companies. The charges for the second option, however, would be placed upon the called party that returns the call. This billing inflexibility is increasingly unattractive if the calling party frequently places international telephone calls.

Therefore, what is needed is a system and method for placing a self-billed international telephone call from a foreign country to the United States using routes controlled by domestic telephone companies.

Summary of the Invention

The present invention satisfies the above mentioned needs by providing an international callback system and method. This international callback system and method establishes a connection between a foreign calling party and

a domestic called party. The routing and billing for this connection is controlled by a domestic telephone company. Generally, the connection may represent an audio phone call, a video phone call, or a part of a general audio/video phone conference.

5

In this process, an international callback center residing in the United States, receives a phone call from the foreign calling party. This phone call is originated with a foreign telephone company and may be toll-free or billed in accordance with the telephone company's international rates. During this
10 phone call, the international callback center receives the phone numbers for both the foreign calling party and the domestic called party. Additionally, the foreign calling party provides the international callback center with a payment method (e.g., credit card, calling card, etc.). After the payment method is validated, the international callback center schedules an international callback.

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At the scheduled time, the international callback center first calls the domestic called party. If the domestic called party is available, the international callback center places a second phone call to the foreign calling party. The second phone call is carried over a connection that is controlled by a domestic telephone company. If the foreign calling party is available, the
20 foreign calling party and the domestic called party are connected together. By this process, the foreign calling party pays for an international call that is billed according to the international call rates set by the domestic telephone company.

25

Generally, the present invention is applicable to a generic connection between a calling party and a called party. The calling party originates a call with a first telephone company and contacts a second telephone company that can provide a lowest cost connection between the calling party and the called

party. The calling party and the called party may either reside in the United States or a foreign country. In one example, a calling party, residing in Europe, calls a domestic telephone company to schedule a connection between himself and a called party in Mexico. In this example, the domestic telephone company's network may extend into Mexico through contractual arrangements.

Brief Description of the Figures

The foregoing and other features and advantages of the invention will be apparent from the following, more particular description of a preferred embodiment of the invention, as illustrated in the accompanying drawings. In the drawings, like reference numbers indicate identical or functionally similar elements. Additionally, the left-most digit of a reference number identifies the drawing in which the reference number first appears.

Figure 1 illustrates a high level overview of an international callback system.

Figures 2 and 3 illustrate flow charts of the international callback process.

Detailed Description of the Preferred Embodiments

In an international phone call, the calling party and the called party are connected by a foreign telephone company and a domestic telephone company (e.g., MCI Communications Corporation). For our purposes here, the domestic telephone company includes any domestic telephone company that is authorized to provide international phone service. Generally, there are two

types of international phone calls, inbound and outbound. An outbound telephone call is an international phone call that originates in the United States and terminates in a foreign country. Conversely, an inbound telephone call is an international phone call that originates in a foreign country and terminates in the United States.

5

As noted above, significant disparity exists between international phone calls that are classified as either inbound or outbound. Figure 1 illustrates a high level overview of the international call system. For inbound calls, an international caller 102 originates an international phone call with foreign telephone company 104. Typically, foreign telephone company 104 transmits the inbound call over foreign telephone company routes 106 that it controls. The inbound call is received by domestic telephone company 112 and connected with domestic party 114. Foreign telephone company 104 controls the billing of the inbound call.

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15

For outbound calls, a domestic party 114 originates an international phone call with a domestic telephone company 112. Domestic telephone company 112 transmits the outbound call over domestic telephone company routes 108 that it controls. The outbound call is received by foreign telephone company 104 and connected with international party 102. Domestic telephone company 112 controls the billing of the outbound call. Typically, the rates for inbound calls are higher than the rates for the outbound calls.

20

The present invention provides international calling party 102 with an alternative to the current fee structure imposed by foreign telephone company 104. Figures 2 and 3 illustrate the two phases involved in the general

international callback process. Figure 2 describes a setup phase while Figure 3 describes a connection phase.

5 The setup phase of Figure 2 begins in step 204 where international calling party 102 calls international callback center 110 to schedule an international callback. In one example, this initial call originates in foreign telephone company 104 and arrives at domestic telephone company 112 via foreign telephone company routes 106. As such, this initial call is subject to the rates set by foreign telephone company 104. Alternatively, international callback center 110 is reached through an international toll free number.

10 In a preferred embodiment, international callback center 110 is part of domestic telephone company 112. In other embodiments, international callback center 110 is controlled and/or operated by a third-party service provider. In either case, international callback center 110 is a specialized switching center that may receive or originate calls. To perform the callback feature,
15 international callback center 110 may include voice response units, voice recognition units, one or more databases for storing user information, and a validation system or interface for validating various payment methods.

Continuing in Figure 2, international callback center 110 determines in step 206 whether resources are available for callback processing. Specifically,
20 international callback center 110 determines whether the finite resources of a switch or switch connected processor (not shown) is capable of handling the callback request. If international callback center 110 determines in step 206 that resources are not available, international callback center 110 provides an exit message to international calling party 102 in step 208. The call then ends
25 in step 210.

If, in step 206, international callback center 110 determines that sufficient resources are available, international callback center 110 allocates the necessary resources in step 212. Next, in step 214, international calling party 102 provides the phone numbers for both the calling party and the called party in the scheduled callback. Depending upon the interface, international calling party 102 may provide these numbers using a variety of methods. If a human interface exists, the numbers may be provided verbally. If an automated interface exists, the numbers may be provided using DTMF commands. Alternatively, the automated interface may include voice recognition systems that interpret verbal input. In still further embodiments, the user may select an option from a predefined menu that includes a list of domestic called parties.

Generally, the calling party that is involved in the setup phase need not be the same calling party involved in the connection phase. Anyone may schedule an international phone call between two arbitrary parties. For example, a third-party service organization in a foreign country could be dedicated to the scheduling of international callbacks for foreign callers. The only condition is the provision of a satisfactory payment method.

The provision of the payment method is provided by international calling party 102 in step 216. Various payment methods may be used. For example, international calling party 102 may simply provide either a credit card number or a calling card number. After the payment method is received, international callback center 110 validates the payment method in step 218. This validation process may be performed internally within international callback center 110 (e.g., account database query), internally within domestic telephone company 112, or externally by a third-party financial partner (e.g., credit card service validation interface). If the payment method is invalid,

international callback center 110 releases the previously allocated resources in step 220 and provides an exit message to international calling party 102 in step 222. Thereafter, the call ends in step 224.

5 On the other hand, if the payment method is validated in step 218, international calling party 102 is prompted for the delivery options for the callback. The provision of these delivery options is represented by step 226. Examples of possible delivery options include a foreign language for greeting the calling party and/or the called party, prerecorded greetings, time of callback delivery, number of callback delivery attempts and time between callback
10 delivery attempts.

After international calling party 102 selects a customized callback delivery, international calling party 102 breaks the connection over foreign company routes 106 in step 228. Significantly, this break in connection ends the control of foreign telephone company 104 in the customer billing aspect, if
15 any, of the international call. Thereafter, the international callback is not subject to the rates imposed by foreign telephone company 104.

Additionally, the break in connection permits additional flexibility in the callback process. For example, by breaking the connection, a choice in the time of delivery, subject to customized delivery options, now exists. Thus,
20 international calling party 102 may schedule the international callback during a time when the international rates of domestic telephone company 112 are lower. This provides further savings for international calling party 102 as compared to call origination through foreign telephone company 106.

Continuing in Figure 2, the setup phase is completed by the scheduling of the international callback. In step 230, international callback center 110 schedules an asynchronous calling thread according to the resources allocated in step 212. This asynchronous calling thread is a process that initiates the connection phase at a scheduled time. As noted above, the scheduled time is selected by international calling party 102.

Figures 3A and 3B illustrate the connection phase of the international callback. The connection phase begins in step 304 where international callback center 110 determines whether it is time to establish a connection. If it is not time to establish a connection, the asynchronous calling thread continues to sleep in step 306. This sleep time is appropriately calculated according to the delivery options specified in step 226 of Figure 2. Step 230 of Figure 2 and step 312 of Figure 3 calculate the sleep time. In an alternate embodiment, a timer is used to determine the start of the next call attempt.

If it is time to make the call, international callback center 110 calls domestic called party 114 in step 308. The phone number of domestic called party 114 is provided by international calling party 102 in step 214 of Figure 2. If international callback center 110 determines in step 310 that the call to domestic called party 114 was not successful (e.g., no answer), international callback center 110 determines in step 312 whether the number of retries have been exhausted. If not, international callback center 110 schedules a time for the next call attempt in step 340. The parameters defining if and when the next call attempt is to be made is provided by international calling party 102 in step 226 of Figure 2.

If, in step 312, international callback center 110 determines that the number of retries has been exhausted, international callback center 110 optionally calls international calling party 102 in step 328 of Figure 3B. During this call, international callback center 110 inquires if international calling party 102 desires to schedule another callback. If, in step 330, it is determined that international calling party 102 is not available, the allocated resources are released in step 332 and the process ends in step 334. If international calling party 102 is available, international calling center 110 inquires about the possibility of another callback. If international calling party 102 does not desire another callback, the allocated resources are released in step 332 and the process ends in step 334. On the other hand, if international calling party 102 does desire another callback, the callback is scheduled in step 340.

Returning to step 310, if a connection is established to domestic called party 114, international callback center 110 greets domestic called party 114 in step 314 according to the delivery options defined in step 226 of Figure 2. Next, international callback center 110 calls international calling party 102 in step 316. As noted above, international calling party 102 need not be the same calling party involved in the setup phase described in Figure 2.

If the attempt to establish a connection to international calling party 102 is not successful, international callback center informs domestic called party 114 in step 320. International callback center then ends the callback connection process in step 322.

If a connection is established to international calling party 102, international callback center 110 connects international calling party 102 with

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domestic called party 114 in step 324. This connection is carried over domestic telephone company routes 108 since the international call was originated in the United States (i.e., an outbound call). International calling party 102 is thus billed in accordance with the international rates established by domestic telephone company 112 for the particular time period at which the scheduled callback process was completed. To complete the process, international callback center 110 frees the previously allocated resources in step 326, thereby terminating the asynchronous calling thread and releasing the associated resources.

Having thus described the international callback process, a generic embodiment is now defined. More generally, the present invention is applicable to a generic connection between a calling party and a called party. This generic connection encompasses audio phone calls, video phone calls, links in audio/video conferences, or any data communication that requires use of a telephone company's tolled facilities.

The calling party and the called party may reside in either the United States or a foreign country. Communication between the calling party and the called party may proceed through the use of at least party of a first telephone company or a second telephone company. Depending upon the call origination, the cost of the connection may be controlled by either the first telephone company or the second telephone company.

In this context, the calling party desires that the telephone company that can provide a lowest cost connection should control the routing and billing of the connection. In operation, the calling party, or a third party on behalf of the calling party, initially contacts the lowest-cost telephone company and directs

them to setup the connection. Thereafter, the lowest-cost telephone company contacts both the calling party and the called party and establishes a generic connection between them. The calling party, or a third party on behalf of the calling party, is billed by the lowest-cost telephone company.

5 It should be understood that embodiments of the present invention can be implemented in hardware, software or a combination thereof. In such embodiments, the various components and steps would be implemented in hardware and/or software to perform the functions of the present invention. Any presently available or future developed computer software language and/or
10 hardware components can be employed in such embodiments of the present invention. In particular, the flow charts discussed above can be especially useful for creating the software embodiments.

What Is Claimed Is:

1 1. An international callback system for establishing a connection
2 between a foreign calling party and a domestic called party, comprising:
3 means for receiving a first international phone call from the foreign
4 calling party, wherein said first international phone call is carried over a
5 connection controlled by a foreign telephone company;
6 means for receiving phone numbers for the foreign calling party and for
7 the domestic called party;
8 means for scheduling a second international phone call;
9 means for calling the domestic called party at the scheduled time;
10 means for placing said second international phone call to the foreign
11 calling party, wherein said second international phone call is carried over a
12 connection controlled by a domestic long-distance telephone company; and
13 means for connecting the foreign calling party to the domestic called
14 party.

1 2. The system of claim 1, further comprising a means for validating
2 a payment method for said second international phone call.

1 3. The system of claim 1, further comprising means for receiving
2 from the calling party input identifying a greeting language, time of delivery,
3 duration of delivery attempts, or prerecorded greetings.

1 4. An international callback method for establishing a connection
2 between a foreign calling party and a domestic called party, comprising the
3 steps of:

- 4 (1) receiving in an international callback center a first international
5 phone call from the foreign calling party, wherein said first international phone
6 call is carried over a connection controlled by a foreign telephone company;
7 (2) receiving in said international callback center, phone numbers
8 for the foreign calling party and for the domestic called party;
9 (3) scheduling a second international phone call;
10 (4) calling the domestic called party at the scheduled time;
11 (5) placing said second international phone call to the foreign calling
12 party, wherein said second international phone call is carried over a connection
13 controlled by a domestic long-distance telephone company; and
14 (6) connecting the foreign calling party to the domestic called party.

1 5. The method of claim 4, further comprising the step of:
2 (7) validating a payment method for said second international phone
3 call.

1 6. The method of claim 5, wherein said step (7) comprises the step
2 of sending a validation request to a third party validator.

1 7. The method of claim 4, wherein said step (3) comprises the step
2 of scheduling said second international phone call during a time period having
3 reduced international calling rates.

1 8. The method of claim 4, further comprising the step of:
2 (7) receiving from the calling party, input defining a delivery
3 method for said steps (4) and (5).

1 9. The method of claim 8, wherein said step (7) comprises the step
2 of receiving input identifying a greeting language, time of delivery, duration of
3 delivery attempts, or prerecorded greetings.

1 10. An international callback system for establishing a connection
2 between a foreign calling party and a domestic called party, comprising:
3 means for receiving phone numbers for the calling party and for the
4 called party;
5 means for scheduling an international phone call;
6 means for calling the called party at the scheduled time;
7 means for placing said international phone call to the calling party,
8 wherein said international phone call is carried over a connection controlled by
9 a domestic telephone company and said international phone call is billed to a
10 foreign party; and
11 means for connecting the foreign calling party to the called party.

1 11. The system of claim 10, wherein said means for receiving phone
2 numbers receives phone numbers for the calling party and the called party from
3 the calling party during an international phone call that is carried over a
4 connection controlled by a foreign telephone company.

1 12. The system of claim 10, wherein said means for receiving phone
2 numbers receives phone numbers for the calling party and the called party from
3 a foreign party during an international phone call that is carried over a
4 connection controlled by a foreign telephone company.

1 13. The system of claim 10, further comprising means for validating
2 a payment method for said second international phone call.

3 14. The system of claim 10, further comprising means for receiving
4 from the calling party input identifying a greeting language, time of delivery,
5 duration of delivery attempts, or prerecorded greetings.

1 15. An international callback method for establishing a connection
2 between a foreign calling party and a domestic called party, comprising the
3 steps of:

- 4 (1) receiving in an international callback center, phone numbers for
5 the calling party and for the called party;
6 (2) scheduling an international phone call;
7 (3) calling the called party at the scheduled time;
8 (4) placing said international phone call to the calling party, wherein
9 said international phone call is carried over a connection controlled by a
10 domestic long-distance telephone company;
11 (5) connecting the calling party to the called party; and
12 (6) billing said international phone call to a foreign party.

1 16. The method of claim 15, wherein said step (1) comprises the step
2 of receiving phone numbers for the calling party and the called party from the
3 calling party during an international phone call that is carried over a connection
4 controlled by a foreign telephone company.

1 17 The method of claim 15, wherein said step (1) comprises the step
2 of receiving phone numbers for the calling party and the called party from a
3 foreign party during an international phone call that is carried over a connection
4 controlled by a foreign telephone company.

1 18. The method of claim 15, further comprising the step of:
2 (7) validating a payment method for said second international phone
3 call.

1 19. The method of claim 18, wherein said step (7) comprises the step
2 of sending a validation request to a third party validator.

1 20. The method of claim 15, wherein said step (2) comprises the step
2 of scheduling said international phone call during a time period having reduced
3 international calling rates.

1 21. The method of claim 15, further comprising the step of:
2 (7) receiving from the calling party, input defining a delivery
3 method for said steps (4) and (5).

1 22. The method of claim 21, wherein said step (7) comprises the step
2 of receiving input identifying a greeting language, time of delivery, duration of
3 delivery attempts, or prerecorded greetings.

1 23. A method for establishing a connection between a calling party
2 and a called party, comprising the steps of:

3 (1) receiving in a callback center a first call from the calling party,
4 wherein the calling party resides in a territory controlled by a first telephone
5 company;

6 (2) receiving in said callback center, phone numbers for the calling
7 party and for the called party;

- 8 (3) calling the calling party and the called party at a scheduled time,
9 wherein the billing of the calls to the calling party and the called party are
10 controlled by a second telephone company; and
11 (4) connecting the calling party to the called party.

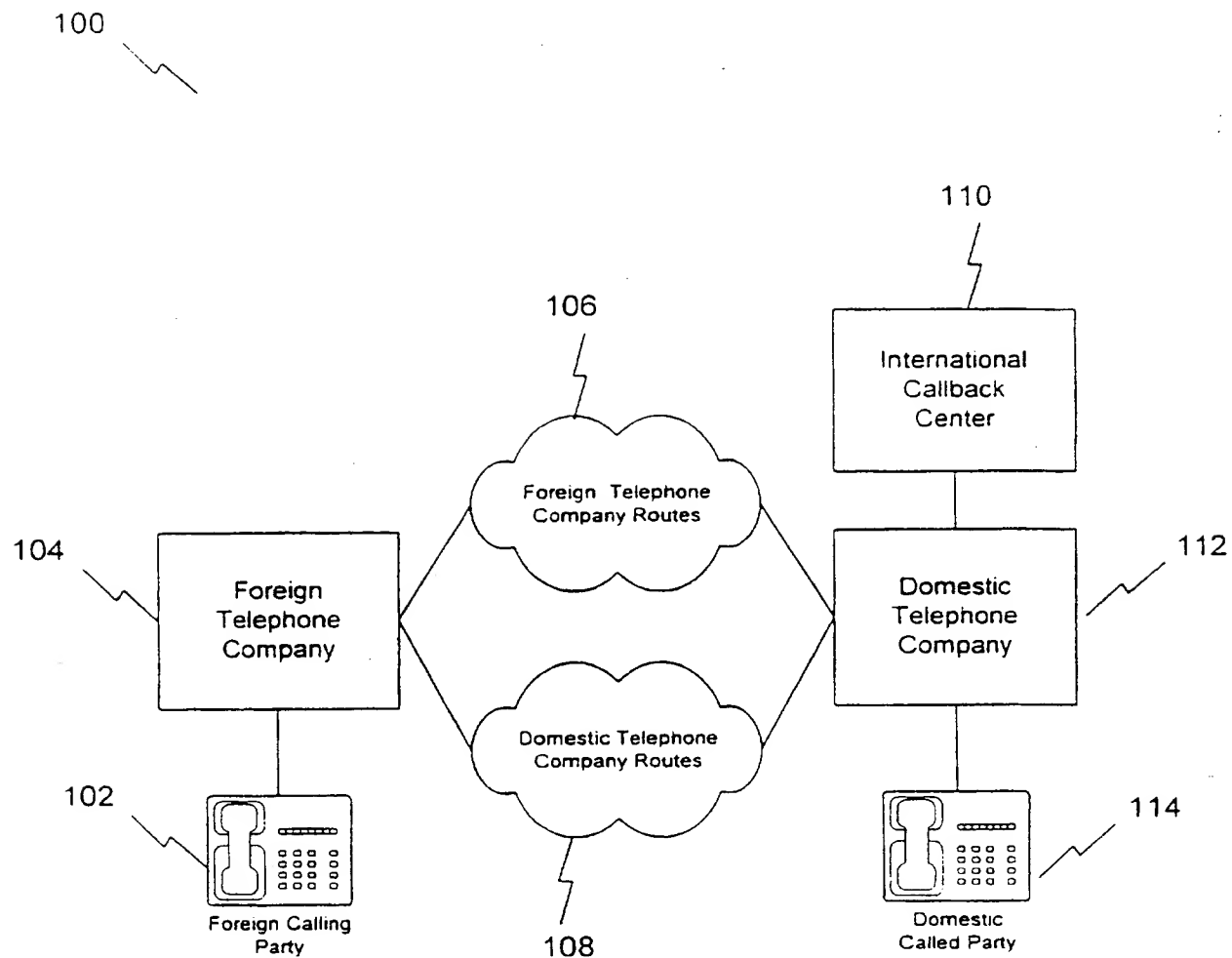


Figure 1

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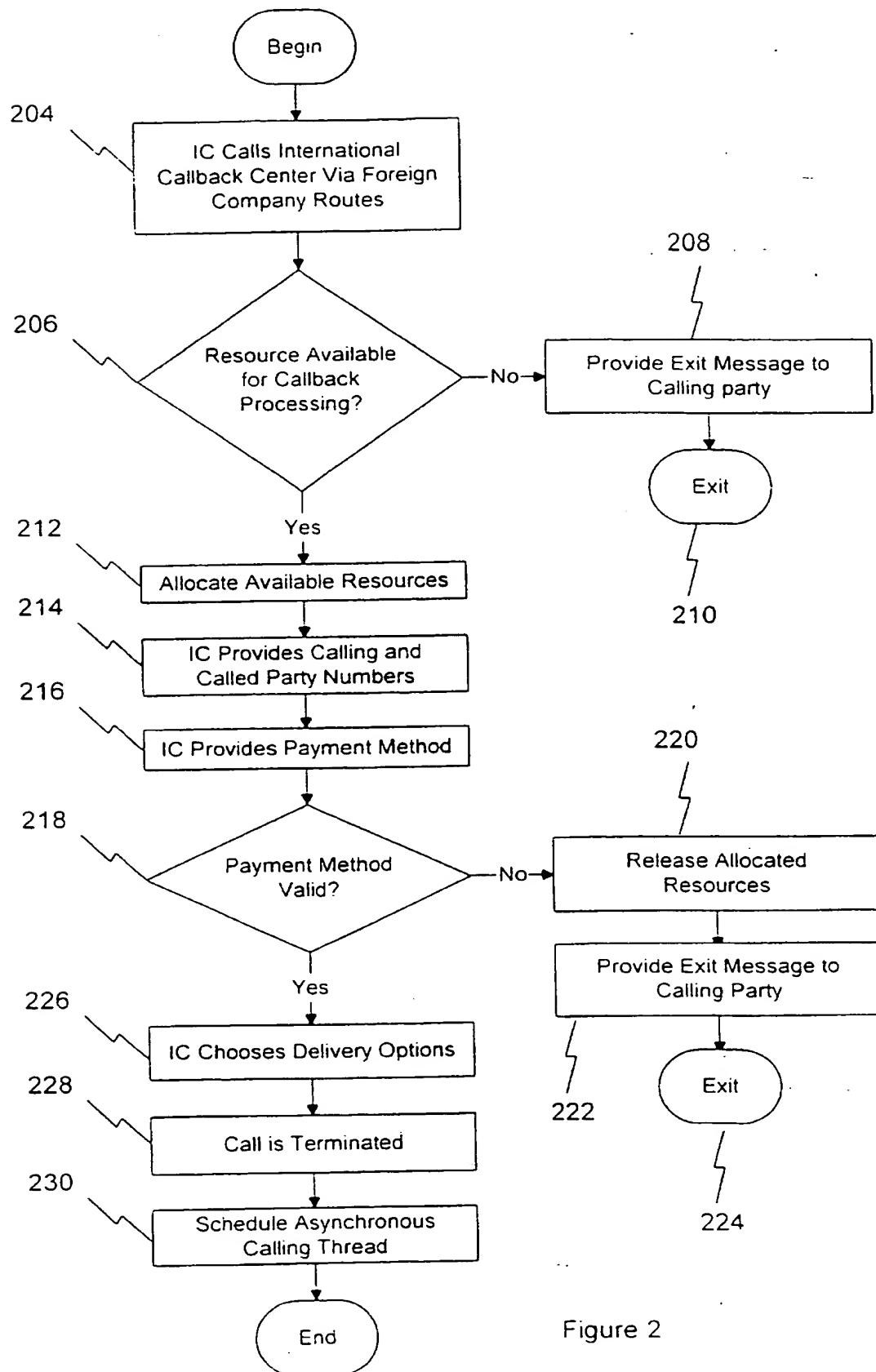


Figure 2

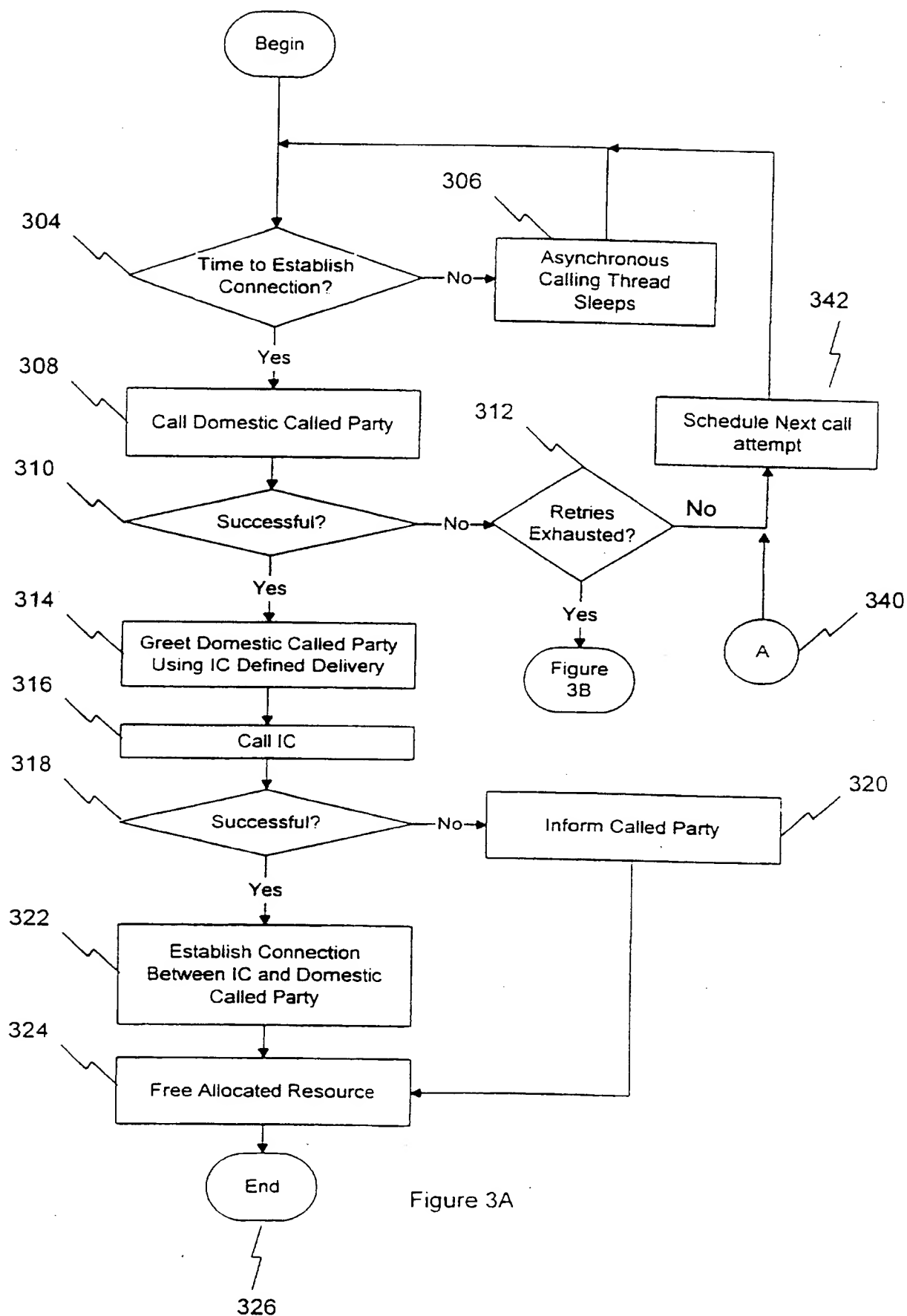


Figure 3A

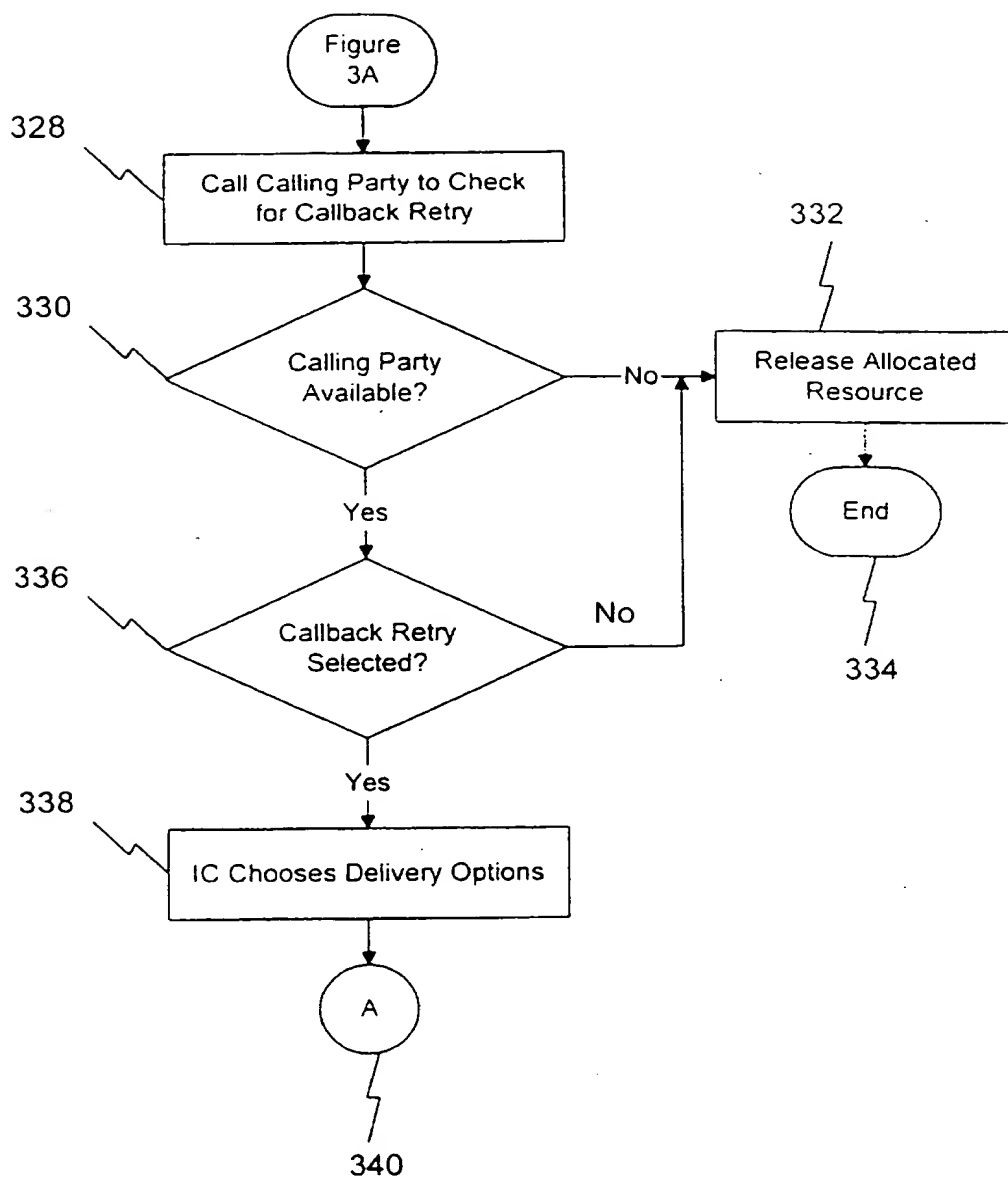


Figure 3B

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